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Summary of Document 1

"HANNOUSEI MONOMER NO SHINTENKAI (New Development in Reactive Monomer)", CMC Publishing CO., LTD.

§3.5.1 Silicone grafted polyethylene (electrical cable coating material)

Cross-linked polyethylenes are used as the coating material in the field of electrical cable because of their electrical characteristics and mechanical characteristics. As crosslinking methods, various methods such as a sulfur vulcanization method and a peroxide crosslinking method are commonly used, but such methods need to be conducted at high temperature. Recently, a crosslinking method using silicone grafted polyethylene has been developed.

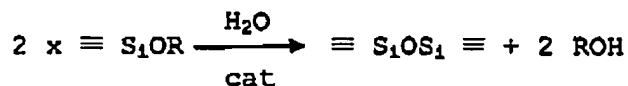
This method attracts attention and made into practical use because it can cause crosslinking reaction by simply making the polyethylene contact with moisture.

Summary of Document 2

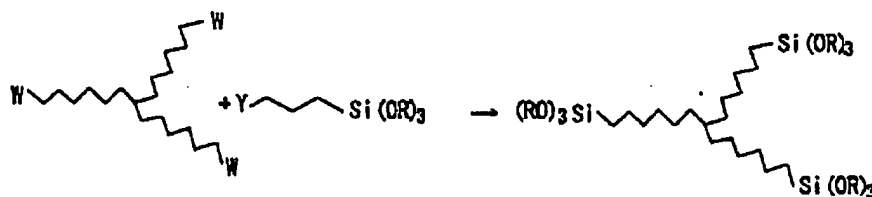
"SAISHIN SILICONE GIJYUTSU (Latest Silicone Technology)", CMC Publishing CO., LTD.

Introduction of Cross-linking Group into Polymer

Alkoxy group contained in a silane coupling agent generates a stable siloxane bond by reacting with H_2O under existence of a catalyst such as an organic tin compound as shown in below formula.



As this reaction progresses with cold water, hot water, steam or moisture in the air, it is utilized as cross-linking reaction of polymers. An advantage of the silane coupling agent is that it can easily synthesize a crosslinkable polymer by using silane that contains a functional group ("Y" in the figure) which reacts with a functional group of a non-crosslinkable polymer ("W" in the figure).



Silane crosslinkable polymer is not only easily crosslinked with H_2O , it also has heat resistance and is excellent in adhesion to inorganic substances. Apart from the method illustrated, there are following methods as synthesizing methods of the crosslinkable polymers: a method of copolymerizing a silane which contains a polymerizable unsaturated bond such as a vinyl group and a methacryl group

with a vinyl monomer or an acrylic monomer, and a method of grafting vinyl silane and methacryl silane under the existence of a radical initiator. These methods have been already put into practical use for materials such as crosslinking polyethylene, sealant and crosslinkable acrylate resin.